# 4th World Congress on Agroforestry

20-22 May 2019
Montpellier, France

# Book of Abstracts

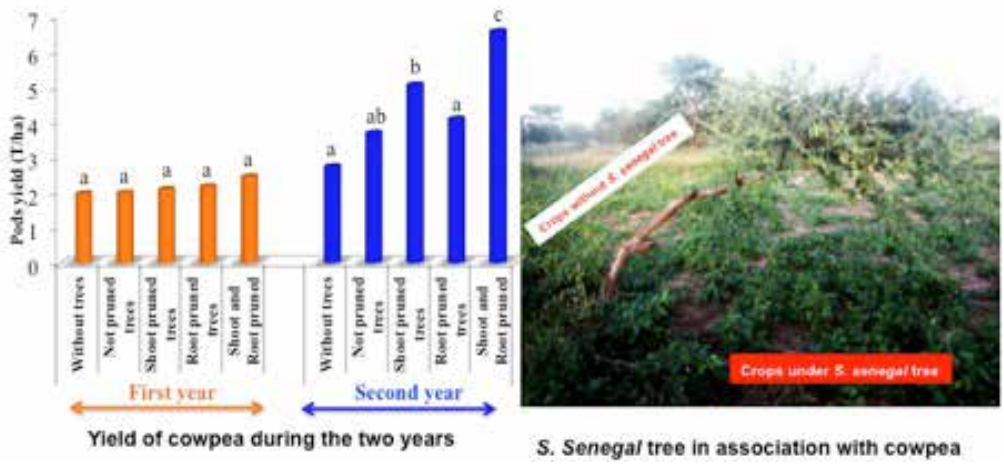
**L18_O.06**

# Importance and trees management of *Senegalia senegal* on soil fertility and yield of associated crops in northern Senegal

Fall D.[1] (dioumacorfall@yahoo.fr), Wilson J.[2], Kane A.[3], Bakhoum N.[4], Ndoye F.[5], Sylla E. H. S. N.[3], Lesueur D.[6], Diouf D.[3]

[1] *Senegalese Institute of Agricultural Res, Bambey, Senegal*; [2] *Centre for Ecology & Hydrology, Edinburgh, United Kingdom*; [3] *University of Cheikh Anta DIOP (UCAD), Dakar, Senegal*; [4] *LCM-Laboratoire Commun de Microbiologie, Dakar, Senegal*; [5] *Université du Sine Saloum El-Hadj Ibrahi, Kaolack, Senegal*; [6] *CIRAD, CIAT Asia, Hanoi, Vietnam*

**T**rees are usually eliminated in field due their possible competition with crops for water and nutrients. Our work aimed to investigate how to manage *S. senegal* trees to optimize their association with crops. A field trial was conducted under natural conditions in a *S. senegal* plantation 10 years old. Investigations were conducted during two years to evaluate the effect of *S. senegal* trees management on gum arabic yield, associated cowpea yield, soil mycorrhizal fungi spores density and enzymes activities reflecting soil fertility such as fluorescein diacetate (FDA), acid phosphatase and dehydrogenase. Four treatments of pruning were applicated (control, shoots, roots, shoots and roots pruning) and tapped in november. Soil samples were collected during dry and wet seasons at 0-25 cm layer. Cowpeas were sown at the beginning of rainy season in rows 0.5 m apart. Results showed that shoots pruning significantly increased gum arabic while a negative effect of roots pruning was noted. The presence of *S. senegal* increased soil fertility and cowpea yield. Any significant effect of treatments was noted on pods yield during the first year. However, shoots pruning, shoot and roots pruning increased significantly pods yield during the second year. Shoots and roots pruning seemed to decrease FDA and spores density depending on the season. Our results showed that shoots and roots pruning increased the positive effect on soil fertility and the association of *S. senegal* with annual crops.




Effect of S. senegal tree management on cowpea production

**Keywords:** S. senegal, trees pruning, soil fertility, crops, Agroforestry.

References:

1. Abdoulkadri et al. 2019, Adv. Agri. Sci., 7 (01) : 74-84
2. Fall et al. 2012, J. Env. Manag., 95 : S260-S264. DOI:10.1016/j.jenvman.2011.03.038
3. Morais et al. 2012, Exp. Agri., 48(02). DOI: 10.1017/S0014479711001141
4. Maudu et al. 2010, J. Med. Plant Res., 4(22) : 2353-2358. DOI: 10.5897/JMPR10.486
5. Dommergues 1995, Fert. Res., 42: 245-271